

# Ventilation for buildings — Design and dimensioning of residential ventilation systems

ICS 91.140.30

## National foreword

This Published Document is the official English language version of CEN/TR 14788:2006.

The UK participation in its preparation was entrusted to Technical Committee RHE/2, Ventilation for buildings, heating and hot water services, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

### Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a Published Document does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, the CEN/TR title page, pages 2 to 61 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

### Amendments issued since publication

Amd. No.	Date	Comments

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 11 May 2006

© BSI 2006

ICS 91.140.30

English Version

## Ventilation for buildings - Design and dimensioning of residential ventilation systems

Ventilation des bâtiments - Conception et dimensionnement des systèmes de ventilation résidentiels

Lüftung von Gebäuden - Ausführung und Bemessung der Lüftungssysteme in Wohnungen

This Technical Report was approved by CEN on 30 January 2006. It has been drawn up by the Technical Committee CEN/TC 156.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Contents

	Page
Foreword.....	v
1 Scope .....	1
2 References.....	4
3 Terms and definitions .....	5
4 Symbols and units .....	6
5 Need for ventilation in dwellings (residences) .....	6
6 Design assumptions for residential ventilation.....	9
7 Performance requirements for ventilation systems.....	10
8 Design rules for residential ventilation systems.....	22
9 Specification and documentation .....	27
Annex A (informative) Residential pollutant production rates .....	28
Annex B (informative) The relationship between humidity and temperature and use of the psychrometric chart .....	31
Annex C (informative) Method of calculating water vapour absorption effect .....	33
Annex D (informative) Residential ventilation systems and their interaction with the dwelling.....	35
Annex E (informative) Calculation methods for ventilation requirements .....	40
Annex F (informative) Examples of assumptions and resulting calculated values for ventilation air flow rates .....	43
Annex G (informative) Noise .....	52
Annex H (informative) Nomograph for calculating air flow rate to reduce the risk of surface condensation occurring on the inner wall surface for various wall U-values and ambient air conditions.....	59
Bibliography.....	61

## Foreword

This Technical Report (CEN/TR 14788:2006) has been prepared by Technical Committee CEN/TC 156 "Ventilation of buildings", the secretariat of which is held by BSI.

Currently in preview, click buy full version

## 1 Scope

This Technical Report specifies recommendations for the performance and design of ventilation systems which serve single family, multi family and apartment type dwellings during both summer and winter. It is of particular interest to architects, designers, builders and those involved with implementing national, regional and local regulations and standards.

Four basic ventilation strategies are covered; natural ventilation, fan assisted supply air ventilation, fan assisted exhaust air ventilation and fan assisted balanced air ventilation. Combinations of these systems are not excluded and a ventilation system may serve only one dwelling (*individual system*) or more than one dwelling (*central system*). The ventilation aspects of combined systems (ventilation with heating and/or cooling) are covered.

The ventilation of garages, common spaces, roof voids, sub-floor voids, wall cavities and other spaces in the structure, under, over or around the living space are not covered.

Ventilation systems covered by this Technical Report may affect the entry and dilution of radon and other gases from the ground but these effects are not covered in this Technical Report. Ventilation systems designed to reduce the entry of radon and other gases from the ground are not covered by this Technical Report.

## 2 References

The following referenced documents are indispensable for the application of this Technical Report. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 779, *Particulate air filters for general ventilation — Determination of the filtration performance*

EN 1507, *Ventilation for buildings — Sheet metal air ducts with rectangular section — Requirements for strength and leakage*

ENV 12097, *Ventilation for buildings — Ductwork — Requirements for ductwork components to facilitate maintenance of ductwork systems*

EN 12236, *Ventilation for buildings — Ductwork hangers and supports — Requirements for strength*

EN 12237, *Ventilation for buildings — Ductwork — Strength and leakage of circular sheet metal ducts*

EN 12792:2003, *Ventilation for buildings — Symbols, terminology and graphical symbols*

EN 13141-1, *Ventilation for buildings — Performance testing of components/products for residential ventilation — Part 1: Externally and internally mounted air transfer devices*

EN 13465, *Ventilation for buildings — Calculation methods for the determination of air flow rates in dwellings*

EN 14134, *Ventilation for buildings — Performance testing and installation checks of residential ventilation systems*

EN 13779, *Ventilation for non-residential buildings — Performance requirements for ventilation and room conditioning systems*

EN ISO 140-10, *Acoustics — Measurement of sound insulation in building and building elements — Part 10: Laboratory measurement of airborne sound insulation of small building elements (ISO 140-10:1991)*

EN ISO 140-3, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurement of airborne sound insulation of building elements (ISO 140-3:1995)*

EN ISO 10211-1, *Thermal bridges in building construction — Heat flow and surface temperatures — Part 1: General calculation method (ISO 10211-1:1995)*